

## REMARKS

### Introductory Comments

Claims 1-11, 16, 30, 33, and 34 were pending in the present application. Claims 1 and 33 have been canceled without prejudice, and claims 2-11, 16, 30, and 34 have been amended, leaving claims 2-11, 16, 30, and 34 for consideration upon entry of the present Amendment. The claims have been amended as explained below. No new matter has been introduced by these amendments. Reconsideration and allowance of the claims is respectfully requested in view of the foregoing amendments and the following remarks.

### Claim Amendments

Claims 1 and 33 have been canceled without prejudice.

Independent claims 16 and 30 have been amended to recite, in clause (a), “a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof”. Support for these amendments can be found in the application as filed, page 4, second paragraph.

Claims 2-11 and 34 have been amended to depend from claim 30 rather than claim 1.

Applicants are not conceding in this application that the canceled claims are not patentable over the art cited by the Examiner. Nor are Applicants conceding that the amended claims would not have been patentable without the current amendments. The present claim cancellations and amendments are intended only to facilitate expeditious allowance of valuable subject matter. Applicants respectfully reserve the right to present and prosecute the original versions of canceled and amended claims in one or more continuing applications.

### Anticipation Rejections Over Frolich

Claims 1-5, 16, 30 and 33 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 6,093,217 to Frolich et al. (hereinafter “Frolich”).

08/26/2008 Final Office Action, page 2, paragraph no. 2. The rejections of claims 1 and 33 are moot in view of their present cancellation. Applicants respectfully traverse the rejections of claims 2-5, 16, and 30 to the extent they may be applicable to the claims as currently amended.

Frolich generally describes an aqueous dispersion containing a cellulose-reactive sizing agent and an anionic hydrophobically modified cellulose-derivative, its preparation and use in the production of paper. Frolich abstract. In Frolich's methods of preparing his aqueous dispersions, the dispersion of the cellulose-reactive sizing agent is formed in the presence of the anionic hydrophobically modified dispersing agent. Frolich, column 6, line 43 to column 7, line 17.

Applicants respectfully assert that claims 2-5, 16, 30 and 33 are not anticipated by Frolich because Frolich does not teach emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof.

Anticipation requires that all of the limitations of the claim be found within a single prior art reference. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). "Because the hallmark of anticipation is prior invention, the prior art reference – in order to anticipate under 35 U.S.C. § 102 – must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements "arranged as in the claim."" *Net MoneyIn v. Verisign*, No. 2007-1565, slip op. at 15, 2008 WL 4614511 at \*8, (Fed. Cir. 2008) (*quoting Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

Applicants' independent claims 16 and 30, as currently amended, each require the step of "(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof". Frolich does not teach this step. In Frolich, the dispersion is "produced by mixing an aqueous phase with the [hydrophobically modified] dispersing agent and the sizing agent, and optionally the surfactant, preferably at a temperature where the sizing agent is liquid, and homogenizing the mixture so obtained,

suitably under pressure.” Frolich, column 7, lines 61-65. The Office Action calls attention to Frolich’s teaching that “[t]he size dispersion can be premixed with the retention aid to make the sizing composition (col 6, lines 48-52; col 7, line 61 to col 8, line 7).” 08/26/2008 Office Action, page 3, last paragraph. However, this “premixing” occurs after the dispersion has been formed (i.e., after the sizing agent has been emulsified), and Frolich’s retention aid is chemically distinct from Applicants’ first starch component. Frolich, column 6, lines 48-52 (“It is possible to pre-mix the size dispersion with a retention aid, e.g. a cationic polymer like cationic starch or a cationic a cationic acrylamide-based polymer, or an anionic silica-based material, prior to introducing the mixture thus obtained into the stock”). Thus, Frolich does not teach Applicants’ claim 16 and 30 required step of “(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof”, and Frolich therefore does not anticipate claims 16 and 30. Given that claims 2-5 each depend directly from claim 16, they too are not anticipated by Frolich.

Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 2-5, 16, and 30 under 35 U.S.C. § 102(b) over Frolich.

#### Obviousness Rejections Over Frolich + Chunyu

Claims 6-11 and 34 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Frolich et al. as evidenced by Chunyu “Alkenyl Succinic Anhydrides (ASA): a Neutral sizing agent”, China Pulp & Paper, No. 3, 2002, provided by applicant (hereinafter “Chunyu”). 08/26/2008 Final Office Action, page 4, paragraph no. 3. Applicants respectfully traverse the rejections of claims 6-11 and 34 to the extent they may be applicable to the claims as currently amended.

Frolich is discussed above.

Chunyu generally describes the use of alkenylsuccinic anhydride as a sizing agent in papermaking. Chunyu describes the use of cationic starch as an emulsifier for ASA. Chunyu, page 7, lines 6-7.

Applicants respectfully assert that claims 6-11 and 34 are patentable over Frolich as evidenced by Chunyu because the cited references do not teach or suggest emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all limitations of the claim be taught or suggested by the prior art. *See, e.g., CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974).

As noted above, independent claim 30, from which claims 6-11 and 34 depend, requires the step of “(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof”. As discussed above, Frolich does not teach or suggest this step. Chunyu, which is cited for teaching the hydrolysis of alkenyl succinic anhydride (08/26/2008 Office Action, page 4, second paragraph), does not cure the deficiency of Frolich. Thus, Frolich and Chunyu do not teach or suggest all limitations of claims 6-11 and 34 and the references therefore do not support a prima facie case of obviousness against these claims. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 6-11 and 34 under 35 U.S.C. § 103(a) over Frolich as evidenced by Chunyu.

#### Anticipation or Obviousness Rejection Over Frolich

Claim 30 stands rejected under 35 U.S.C. § 102(b) as allegedly anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over Frolich. 08/26/2008 Final Office Action, page 5, paragraph no. 4. Applicants respectfully traverse this rejection to the extent it may be applicable to claim 30 as currently amended.

Claim 30 is neither anticipated by nor obvious over Frolich because, as discussed above, Frolich does not teach or suggest the step of “(a) emulsifying alkenylsuccinic

anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof". Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claim 30 under 35 U.S.C. § 102(b) or under 35 U.S.C. § 103(a) over Frolich.

Anticipation or Obviousness Rejection Over Conner

Claims 1-5, 16, 30, 33 and 34 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,183,550 to Conner et al. (hereinafter "Conner"). 08/26/2008 Final Office Action, page 6, paragraph no. 5. The present cancellation of claims 1 and 33 render their rejection moot. Applicants respectfully traverse the rejections of claims 2-5, 16, 30, and 34 to the extent they may be applicable to the claims as currently amended.

Conner generally describes aqueous paper size dispersions comprising: a) at least one paper sizing compound, and b) a water-soluble dispersant containing at least two hydrophilic groups and at least one hydrophobic group. Conner abstract. Conner's paper size dispersion can, optionally, contain starch or modified starch. Conner, column 9, lines 25-29. However, Conner does not appear to teach or suggest emulsifying the paper sizing compound in the presence of starch. To the contrary, Conner repeatedly teaches addition of pre-formed dispersion of sizing compound to a starch solution. See, e.g., Conner, Example 2 (especially column 11, lines 52-53), Example 6 (especially column 13, lines 30-38), Example 7 (especially column 13, lines 51-64), and Example 10 (especially column 14, lines 60-66).

Applicants respectfully assert that claims 2-5, 16, 30, and 34 are not anticipated by or obvious over Conner because Conner does not teach or suggest the step of "(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof". Applicants' independent claims 16 and 30 each require this step. Conner does not appear to teach or suggest emulsifying alkenyl succinic anhydride in the presence of starch. To the contrary, Conner repeatedly teaches addition of a pre-formed dispersion of sizing compound to a starch solution. See, e.g., Conner, Example 2 (especially column

11, lines 52-53), Example 6 (especially column 13, lines 30-38), Example 7 (especially column 13, lines 51-64), and Example 10 (especially column 14, lines 60-66). Conner there cannot anticipate or render obvious independent claims 16 and 30. Given that claims 2-5 and 34 each depend from and further limit claim 30, they too are neither anticipated by nor obvious over Conner. Applicants therefore respectfully request the reconsideration and withdrawal of the rejection of claims 2-5, 16, 30, and 34 under 35 U.S.C. § 102(b) or under 35 U.S.C. § 103(a) over Conner.

#### Obviousness Rejections Over Conner + Chunyu

Claims 6-11 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Conner et al. as evidenced by Chunyu. 08/26/2008 Final Office Action, page 8, paragraph no. 6. Applicants respectfully traverse these rejections to the extent they may be applicable to the claims as currently amended.

Applicants respectfully assert that claims 6-11 are patentable over the combination of Conner and Chunyu because the cited references do not teach or suggest the step of “(a) emulsifying alkenylsuccinic anhydride with a first starch component containing starch selected from the group consisting of non-ionic starches, anionic starches, and mixtures thereof”. Claims 6-11 require this step via their dependence from claim 30, and, also as noted above, Conner does not teach or suggest this step. Chunyu, which is cited for teaching the hydrolysis of alkenyl succinic anhydride (08/26/2008 Office Action, paragraph bridging pages 8 and 9), does not cure the deficiency of Conner. Thus, Conner and Chunyu do not teach or suggest all limitations of claims 6-11, and the references therefore do not support a prima facie case of obviousness against these claims. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 6-11 under 35 U.S.C. § 103(a) over Conner as evidenced by Chunyu.

#### Nonstatutory Double Patenting Rejections

Claims 1, 4-11 and 33 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 3-10

and 45 of copending Application No. 10/534,202. 08/26/2008 Final Office Action, page 10, paragraph no. 7.

Claims 1, 3-11 and 33 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 3-4, 6-13 and 47 of copending Application No. 10/533,190. 08/26/2008 Final Office Action, page 10, paragraph no. 8.

Applicants thank the Examiner for pointing out the potential obviousness-type double patenting issue between the claims of the present application and those of co-pending application Nos. 10/534,202 and 10/533,190. In view of the present claim amendments and the possibility that claims in the cited applications will be amended before allowance, Applicants will defer responding to this provisional rejection until claims in the reference applications are allowed, claims in the present application are otherwise allowable, and it is determined whether this provisional rejection becomes an actual rejection.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Assignee.

Respectfully submitted,

CANTOR COLBURN LLP  
Applicants' Attorneys

By: /J. Michael Buchanan/  
J. Michael Buchanan  
Registration No. 44,571

Date: November 25, 2008  
Customer No.: 23413  
Telephone: (860) 286-2929